

NPS National Capital Region GRI Workshop *April 30-May 2, 2001*

SUMMARY

Geologic Resources Inventory (GRI) workshops were held for National Park Service (NPS) Units in the National Capital Region (NCR) over April 30-May 2, 2001. The purpose was to view and discuss the park's geologic resources, to address the status of geologic mapping for compiling both paper and digital maps, and to assess resource management issues and needs. Cooperators from the NPS Geologic Resources Division (GRD), Natural Resources Information Division (NRID), individual NPS units in the region, and the United States Geological Survey (USGS) were present for the workshop.

This involved half-day field trips to view the geology of Catoctin Mountain Park, Harpers Ferry NHP, Prince William Forest Park and Great Falls Park, as well as another full-day scoping session to present overviews of the NPS Inventory and Monitoring (I&M) program, the GRD, and the on-going GRI. Round table discussions involving geologic issues for all parks in the National Capital Region included the status of geologic mapping efforts, interpretation, paleontologic resources, sources of available data, and action items generated from this meeting.

Appendix A contains a list of attendees for the scoping sessions

Appendix B contains notes from C&O Canal staff on the meetings

Appendix C contains the PMIS project statement initially proposed by Pat Toops and Scott Southworth (note, the funding source needs to be updated to reflect the source of funding as NPS I&M and not NPS NRPP)

OVERVIEW OF GEOLOGIC RESOURCES INVENTORY (GRI)

The NPS GRI has the following goals:

1. to assemble a bibliography of associated geological resources for NPS units with significant natural resources ("GRBIB") to compile and evaluate a list of existing geologic maps for each unit,
2. to conduct a scoping session for each park,
3. to develop digital geologic map products, and
4. to complete a geological report that synthesizes much of the existing geologic knowledge about each park.

It is stressed that the emphasis of the inventory is **not** to routinely initiate new geologic mapping projects, but to aggregate existing "baseline" information and identify where serious geologic data needs and issues exist in the National Park System. In cases where map coverage is nearly complete (ex. 4 of 5 quadrangles for Park "X") or maps simply do not exist, then funding may be available for geologic mapping.

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After introductions by the participants, Tim Connors presented overviews of the Geologic Resources Division, the NPS I&M Program, the status of the natural resource inventories, and the GRI in particular.

He also presented a demonstration of some of the main features of the **digital geologic database** for the Black Canyon of the Gunnison NP and Curecanti NRA in Colorado. This has become the prototype for the NPS digital geologic map model as it reproduces all aspects of a paper map (i.e. it incorporates the map notes, cross sections, legend etc.) with the added benefit of being geospatially referenced. It is displayed in ESRI ArcView shape files and features a built-in Microsoft Windows help file system to identify the map units. It can also display scanned JPG or GIF images of the geologic cross sections supplied with the map. Geologic cross section lines (ex. A-A') are subsequently digitized as a line coverage and are hyperlinks to the scanned images.

Joe Gregson further demonstrated the developing NPS Theme Manager for adding GIS coverage's into projects "on-the-fly". With this functional browser, numerous NPS themes can be added to an ArcView project with relative ease. Such themes might include geology, paleontology, hypsography (topographic contours), vegetation, soils, etc.

Pete Chirico (USGS-Reston, VA) demonstrated the digital geology of Harpers Ferry and also showed the group potential uses of a digital geologic coverage with his examples for Anacostia and Cumberland Island. The USGS also showed various digital products that they've developed already for Chesapeake and Ohio Canal NHP and Great Falls.

GRBIB

At the scoping session, individual Microsoft Word Documents of Geologic Bibliographies for each NCR park were distributed.

The sources for this compiled information are as follows:

- AGI (American Geological Institute) GeoRef
- USGS GeoIndex
- ProCite information taken from specific park libraries

These bibliographic compilations were then validated by GRI staff to eliminate problems such as duplicate citations and typographical errors, and to check for applicability to the specific park. After validation, they become part of a Microsoft Access database parsed into columns based on park, author, year of publication, title, publisher, publication number, and a miscellaneous column for notes.

From the Access database, they are exported as Microsoft Word Documents for easier readability, and eventually turned into PDF documents. They are then posted to the GRI website at: <http://www2.nature.nps.gov/grd/geology/gri/products/geobib/> for general viewing.

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EXISTING GEOLOGIC MAPS

After the bibliographies were assembled, a separate search was made for any existing surficial and bedrock geologic maps for the National Capital Region parks. The bounding coordinates for each map were noted and entered into a GIS to assemble an index geologic map. Separate coverage's were developed based on scales (1:24,000, 1:100,000, etc.) available for the specific park. Numerous geologic maps at varying scales and vintages cover the area. Index maps were distributed to each workshop participant during the scoping session.

GEOLOGIC MAPPING

Status

The index of published geologic maps are a useful reference for the NCR. However, some of these maps are dated and are in need of refinement and in other places, there is no existing large-scale coverage available. The USGS began a project to map the Baltimore-Washington DC area at 1:100,000 scale and as a result it was brought to their attention that modern, large-scale geologic mapping for the NCR NPS areas would be beneficial to NPS resource management.

Because of this, the USGS developed a proposal to re-map the NCR at large scale (1:24,000 or greater) and to supply digital geologic databases to accompany this mapping. Scott Southworth (USGS-Reston, VA) is the project leader and main contact. The original PMIS (Project Management Information Systems) statement is available in Appendix C and on the NPS intranet (PMIS number 60900); ***of note is that portions of it need to be changed to reflect that the source of funding will be Inventory and Monitoring funds and NOT NRPP.***

Desired Enhancements in the geologic maps for NCR parks

To better facilitate the geologic mapping, Scott Southworth would like to obtain better topographic coverage for each of the NCR units. Tammy Stidham knows that some of these coverages are already available and will supply them to Scott and the USGS. In general, anything in Washington DC proper has 1 meter topographic coverage and Prince George's county has 1:24,000 coverage.

Notes on Individual parks within NCR

(brief summaries from the scoping session and site visits)

- **Rock Creek Park (ROCR)** has been mapped by the USGS at 1:24,000 scale. At the time of the mapping, they focused in on the structural geology. Scott would like to refine the mapping to 1:12,000 scale, and to revisit some of the previous mappers interpretations. Tammy Stidham says that a 1:200 topographic base is available. Additionally, the USGS would like to obtain the topographic contours, hydrography, roads, buildings and structures, and digital ortho quarter quadrangles for use in a base map. Tammy mentioned that soils data is available but that it is dated. Digital coverage exists and has been compiled for the entire area at 1:100,000 scale. Springs and many historic quarries (commodity unknown) are present; there may also be paleontological quarries too; USGS has historical maps for area; topographic coverage of 1 meter.

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- **George Washington Memorial Parkway (Arlington House)** has immediate resource management issues pertaining to the geology of the cemetery, as there are problems with stability and sliding at the site, and the sooner a geology GIS is created, the more beneficial it is likely to be to the park. The park hopes that Scott Southworth and USGS scientists will be able to assist on this issue.
- **Antietam NB (ANTI)** is covered under the existing mapping for C & O canal. However, Scott would like an enhanced topographic base; Tammy says she can supply it. There are also karst issues here, as it relates to the hydrology and karst systems here.
- **Catoctin Mountain (CATO)** will be a bigger project, as there is an interesting surficial geologic story here. Base data is needed. Tammy says that at the time of the scoping meeting, there is not yet topographic data available, but hopefully will be available by the time Scott gets there to map. James Voigt is concerned about poor forest regeneration and wonders if it's tied to the geology. The park would like to relate topographic aspect and the DEMs to the geology as well. There were discussions of trying to investigate the tie of the purple fringed orchid habitat to underlying geology. The superintendent is concerned about potential geologic hazards that might be associated with climbing, as well as potential problems that may exist along Route 77 near Big Hunting Creek. Park staff would like to see better interpretive graphics pertaining to the geology to use in park brochures as well as at wayside exhibits in the park.
- **Chesapeake and Ohio Canal NHP (CHOH)** has a digital geologic strip map currently under review by the USGS; it's hoped that it will be completed by the end of this fiscal year (2001). The mapping was done at 1:24,000 scale, and is in ArcInfo format. It will be possible to take the strip map and enlarge the specific units of CHOH for ease in resource management.

Also included as part of the CHOH geologic database are Antietam NB and most of Monocacy. These can be improved if an enhanced topographic base is available.

Sinkholes are an issue here and it's hoped that the geology can be used to predict them; Scott has been mapping them as he finds them. Numerous cave openings have already been located with GPS units. Four gold mines have hazards associated with the openings; park should contact the Abandoned Mineral Lands (AML) staff in Denver GRD (Dave Steensen or John Burghardt). The park is currently working with Pete Biggam (GRD Soil Scientist) on their soils maps. They have some doqq's and would like to derive a vegetation map from the existing soils and geology since they're so low on the I & M Vegetation priority list. They have some color infrared for south area from the 1980s that might work. They'd like 1:1200 fly overs, but that isn't something being provided as part of this project. Only have a few stereo pairs. They really want to integrate and use the data. Scott says Allegheny County wants the geologic data to make their soils maps.

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Additionally, see the individual synopsis coming from Maria Frias and the CHOH Resource Management staff in Appendix B.

- **George Washington Memorial Parkway (GWMP):** Melissa Kangas and Ann Brazinksi gave us comments during our site visit. There are seep issues from Great Falls to Key Bridge. Invertebrates are found in these seeps and need studied for relationship to geology. Other geologic interpretive possibilities include the Historic Quarries of soapstone near Key Bridge and the geology of Theodore Roosevelt Island. Man-driven shoreline changes are also of interest to the park in the tidal area. Geologic hazards exist along trails for climbers. There is likely a good interpretive story of Theodore Roosevelt Island in the seeps on the south parkway in coastal plain, some springs, and the James Smith spring is of historic interest. They incorporate the fall line into the Theodore Roosevelt Island story. The website for the digital geology of Great Falls is available at:
<http://geology.er.usgs.gov/eespteam/Greatfalls/INDEX.HTML>
- **Harpers Ferry NHP (HAFE)** wants to find uses of their digital geologic map. There has been work done on rock slides on steep sided slopes from the University of West Virginia. Scott Southworth's team has produced the digital geology already, and it is available on-line at <http://geology.er.usgs.gov/eespteam/Harpers/index.htm>. They used a 5 foot contour to enhance the previously published paper map. It is GRD's understanding that the map is available in the HAFE-GIS and that the park is currently using the data for resource management.
- **Manassas (MANA)** was unrepresented at the scoping session, but Bruce says they're doing exotic weed mapping based on geology. We have high resolution topographic data for Prince William County. It's geologically covered in Scott's 100,000 scale map.
- **Monocacy (MONO)** is lumped with Antietam; should have topographic coverage soon. Have occasional flood problems.
- **National Capital East Parks (NACE);** prioritize the parks 1-12:
 1. Ft. Washington (gypsum crystals, Paleontology, seeps)
 2. Piscataway (significant paleontology, seeps); located in Prince George's and Charles Counties
 3. Greenbelt Park
 4. Oxen Run Parkway in DC
 5. Fort Circle Parks in DC with exception of Forts Foote, Stanton, Mayhan
 6. Oxen Cove park
 7. Anacostia Kennelworth parks; separate but contiguous
 8. BW Parkway
 9. Suitland Parkway
 10. Shepherd Parkway
 11. Harmony Hall

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12. Frederick Douglass Home

- **Prince William Forest (PRWI)** has the Quantico quadrangle in paper format, however USGS Geologist Wright Horton has been out to the park and found some issues with miscorrelated volcanic units on the map along South Fork (they shouldn't be volcanics). There was a major reclamation project of the Cabin Branch Pyrite Mine back in 1995 and the rehabilitation of the area is continuing still; there are a few websites on the subject (EPA website at <http://www.epa.gov/reg3wapd/nps/pdf/cabinbranch.pdf> ; NPS website http://www2.nature.nps.gov/grd/distland/prwi_restoration.) The park is preparing "The Geology Trail and Related Sites" as an interpretive trail to showcase some of the parks geology. There is also an abandoned gold mine in the northwest portion of the park with partially collapsed mine shafts at Independence Hill. Bob Mixon has worked on the geology of the Joplin quadrangle; Scott and Pete Chirico will check on the status of the open file report as well as bringing Wright Horton in on this project.
- **Wolf Trap Farm (WOTR)** has 1:24,000 scale topographic coverage
- **Other miscellaneous notes of interest:** slides associated with Fort Circle parks; DC has lots of subsurface data from when the Metro was put in; USGS has access to it; Metro Rail is tunneled below NPS area and may be causing a loss of water to NPS areas from what's disappearing below. ROCR, Anacostia and another too.

DIGITAL GEOLOGIC MAP COVERAGE

The USGS will supply digital geology in ArcInfo format for all of the NCR parks. GRI staff will take this data and add the Windows help file and NPS theme manager capability to the digital geology and will supply to the region to distribute to each park in NCR.

Other desired GIS datasets for NCR

Soils

Pete Biggam (GRD Soil Scientist) supplied the following information in reference to soils for parks:

"**National Capitol Parks - Central**" is covered by the "District of Columbia" Soil Survey (State Soil Survey Area ID MD099). It has been mapped, and is currently being refined to match new imagery. An interim digital product is available to us via NRCS, but the "final certified" dataset most likely will not be available until FY03.

National Capitol Parks - Eastern is covered by portions of 3 soil survey areas; "District of Columbia" (MD099), "Charles County, Maryland" (MD017), and "Prince George's County, Maryland" (MD033). Both Charles County and Prince George's County are currently being updated, with Charles County scheduled to be available sometime in calendar year 2002, and Prince George's County sometime within calendar year 2003.

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Paleontology

Greg McDonald (GRD Paleontologist) would like to see an encompassing, systematic Paleontological inventory for the NCR describing the known resources in all parks with suggestions on how to best manage these resources. In addition to the parks containing paleo resources in NACE, according to his current database, the following are considered "paleo parks" in the NCR:

- Chesapeake & Ohio Canal NHP
- George Washington Memorial Parkway
- Manassas NBP
- Prince William Forest Park
- Harpers Ferry NHP

Geologic Report

A "stand-alone" encompassing report on each parks geology is a major focus of the GRI. As part of the USGS proposal to map the NCR, they will be summarizing the major geologic features of each park in a report to accompany their database. It was suggested hoped that after the individual reports are finished that a regional physiographic report will be completed for the entire NCR.

TIMELINES

Appendix C lays out a specific timeline for how the parks will progress.

Also, at this point, Harpers Ferry is complete and now Scott's main priority is to complete C & O Canal, then perhaps Great Falls (with possible assistance from Barry Wood). C & O Canal still needs page size printable maps for the individual units though to make it complete.

For GRFA, Scott already has a write-up for both sides of the river ("Geology of the Potomac River Gorge"). George Washington Memorial Parkway and Rock Creek are also already in progress.

Appendix A: List of attendees for NPS National Capital Region GRI Workshop *April 30-May 2, 2001*

NAME	AFFILIATION	PHONE	E-MAIL	Monday 4-30	Tuesday 5-1	Wed. 5-2
Joe Gregson	NPS, Natural Resources Information Division	(970) 225-3559	Joe_Gregson@nps.gov	X	X	X
Tim Connors	NPS, Geologic Resources Division	(303) 969-2093	Tim_Connors@nps.gov	X	X	X
Bruce Heise	NPS, Geologic Resources Division	(303) 969-2017	Bruce_Heise@nps.gov	X	X	X
Lindsay McClelland	NPS, Geologic Resources Division	202-208-4958	Lindsay_mcclelland@nps.gov	X	X	X
Scott Southworth	USGS	(703) 648-6385	Ssouthwo@usgs.gov	X	X	X
Pete Chirico	USGS	703-648-6950	Pchirico@usgs.gov	X	X	X
Pat Toops	NPS, NCR	202-342-1443, ext. 212	Pat_toops@nps.gov	X		X
James Voigt	NPS, CATO	301-416-0536	Cato_resource_management@nps.gov	X		
Marcus Koenen	NPS, NCR	202-342-1443, ext. 216	Marcus_koenen@nps.gov	X	X	X
Ellen Gray	NPS, NCR	202-342-1443, ext. 223	Ellen_gray@nps.gov	X		
Dale Nisbet	NPS, HAFE	304-535-6770	Dale_nisbet@nps.gov	X		
Suzy Alberts	NPS, CHOH	301-714-2211	Susan_alberts@nps.gov	X		
Dianne Ingram	NPS, CHOH	301-714-2225	Dianne_ingram@nps.gov	X		
Bill Spinrad	NPS, CHOH	301-714-2221	William_spinrad@nps.gov	X		
Debbie Cohen	NPS, ANTI	301-432-2243	Debbie_cohen@nps.gov	X		
Ed Wenschhof	NPS, ANTI/MONO	301-432-2243	Ed_wenschhof@nps.gov	X		
Ann Brazinski	NPS, GWMP	703-289-2541	Ann_brazinski@nps.gov		X	
Melissa Kangas	NPS, GWMP	703-289-2542	Melissa_Kangas@nps.gov		X	
Barbara Perdew	NPS, GWMP	703-285-2964	Barbara_Perdew@nps.gov		X	
Barry Wood	NPS, GWMP	703-289-2543	Barry_wood@nps.gov		X	
Marie Sauter	NPS, CHOH	301-714-2224	Marie_frias@nps.gov		X	
Carol Pollio	NPS, PRWI	703-221-2176	Carol_pollio@nps.gov		X	
Duane Donnelly-Morrison	NPSI, PRWI	703-221-6921	Duane_donnelly-morrison@nps.gov		X	
Diane Pavek	NPS-NRS	202-342-1443, ext. 209	Diane_Pavek@nps.gov			X
Chris Jones	NPS-WOTR	703-255-1822	Christopher_Jones@nps.gov		X	X
Doug Curtis	NPS-NCR-NRS	202-342-1443, ext.228	Doug_Curtis@nps.gov			X
Brent Steury	NPS-NACE	202-690-5167	Brent_Steury@nps.gov			X
Dave Russ	USGS	703-648-6660	Druss@usgs.gov			X
Tammy Stidham	NPS-RTSC	202-619-7474	Tammy_stidham@nps.gov			X
Dan Sealy	NPS-GWMP	703-289-2531	Dan_Sealy@nps.gov			X
Sue Salmons	NPS-ROCR	202-426-6834, ext. 33	Sue_salmons@nps.gov			X

Appendix B: CHOH staff notes on the scoping session

Geologic Resources Inventory Scoping Session

May 4, 2001

C&O Canal NHP

Notes from Resources Management

“The purpose of the scoping session is to provide an informal setting to review the status of existing geology projects, discuss how the geology inventory can be used by the parks (resource management, interpretation, education, etc.). This will also be a great opportunity to learn about our geologic resources, locations of hidden gold deposits, the inventory process, and to communicate special needs or products that could be helpful to us (e.g. special maps, etc.).”

The following is a compilation and thoughts collected during the Geology scoping session April 30- May2, 2001.

CHOH Interpretation:

1. Scientific terminology should be distributed to park in layman's terminology of information for use with public
2. Needs for the public: develop visitor use maps, publications, walks and programs and information for development of brochures etc.

CHOH Natural and Cultural Resource

Applications:

- Environmental assessments, potential construction sites
- Correlation of Geology (surficial and bedrock) with vegetation to predict location of plant types, etc
- Sinkholes: can we find more sinkholes with data?
- Gold mine: What to do with gold mine – Abandoned Mines program to be contacted
- VEGETATION MAPPING:
 - Park requests development of an interim vegetation map product
 - Currently have some gross land use data from USGS 1999 NLCD National Land Cover Dataset (from 30m TM)
 - Potential to use 1983-4 color IR for interim map
 - NCR collectively addressing vegetation mapping from a region wide request : Diane Pavcek working with Rapid Assessment for Vegetation Mapping (Chris Lea); Mike Storey to petition for I&M buy in; I&M funds needed, ½ with ½ NCR Fee Demo. (Tammy Stidham following up with Mike Storey)
- Locate quarries in relationship to locks and other stone historic structures.
- Erosion issues and flooding of Potomac River – impact on resources

Issues:

- Geology project will have mapped specific geologic features, such as Devils Eyebrow?

Appendix B: CHOH staff notes on the scoping session

- How to use the data to manage resources: relationships among data, application development for park
- Park staff need for instruction and understanding of data and appropriate use of data
- Park understands that the strike and dip information was not mapped for park – too labor intensive

CHOH Park Management:

- Is large scale mapping possible 1:1200 from Geologic mapping program. Answer USGS: no
- Goal: determining relationships between our resources
- Workshop: NCR or select like parks – develop a workshop for interpretation with geologists and liaison go between and resources management to promote use of information for public at park.
- What can WASO do for the park?
- Potomac Gorge geology review: currently assessing geology of Potomac gorge and Mather Gorge – tie into POGO SCP Site Conservation Plan possible???

WASO GRD:

- Plan to have Geology Scoping Report completed by mid-May
- Role is NPS75 I&M goal to inventory geologic resources
- No funding for interpretation or interpretive products
- 2 WASO positions as liaisons between Interpretation, science and resources management
- Developing GIS applications and Theme manager, one application per each of 12 GIS theme layer; GEO data to be prepared for park and installed into theme manager
- 3 year proposal with USGS: National Geologic Mapping Project Goals
Title: *Geologic Mapping – minimum data sets: NCR parks 1:24,000* NCRO-N-002.000
 - Scoping sessions with parks
 - Develop park specific bibliography: known references of park from PROCITE, USGS Geo-Index and AGI (American Geologic Institute) Geo-reference
 - Produce through USGS digital geologic map (delivered in Theme Manager format)
 - Prepare geologic reports per park and for the region
NCR? 11 parks mapped
Large scale 1:6000
Tailored to park products
Time frame: USGS plans to complete mapping for CHOH by end of FY01
- NPS training: data management training with theme applications: Soils, vegetation, geology, H2O, etc
- Current option for technical assistance: Contact Lindsey , Eastern Representative at USGS to broker and obtain technical assistance from USGS for what ever, including interpretation
- Technical Assistance request can be made to the NRPC (?) for application development; not an NRPP request; to I&M program

Appendix B: CHOH staff notes on the scoping session

- Funding requests through the unified call
- Geo-Scientists in the parks: GRD administers for in the park seasonal geo-scientist for projects such as developing interpretive products; contact in GRD is ?
- Shortly after the scoping sessions, our office releases a "scoping summary" posted to a website as both documents and web pages. Some examples from Utah can be found at:
http://www2.nature.nps.gov/grd/geology/gri/products/scope_summary/
<http://www2.nature.nps.gov/grd/geology/gri/>

USGS:

- Parks requested from USGS 50 copies for NCR parks Circular 1148, Forum on Geologic Mapping Applications in the Washington-Baltimore Urban Area
- USGS interested in getting the information to the public but will rely on NPS to do this kind of work; not in current scope of work in above mentioned project.
- USGS requests CHOH to GPS map perimeter of sink holes in park
- USGS requests CAVE openings data from CHOH
- National Geologic Mapping Project, led by Scott Southworth; products in GIS with a tabular usable database which will be reviewed by GRD
Anacostia project – historic and current hypsography mapped and compared; too cool.
- Potomac Gorge geology review: currently assessing geology of Potomac gorge and Mather Gorge – tie into POGO SCP Site Conservation Plan possible???
- Interpretation Vs Data:
USGS will provide the facts in understandable terminology plus data attributes.
NPS to interpret data
- Solicit Park and History Association to adopt and publish 'Rocks and the River' and other new publications

Mafs 5/4/01

WinNT d:\documents\rmdocs\GRDscope_session.doc

Appendix C: PMIS Project Statement 60900

NOTE: *this PMIS statement should be changed to reflect that the source of funding will be Inventory and Monitoring funds and NOT NRPP.*

PMIS Project Detail Sheet:

Project Reference

Project Title: GEOLOGIC MAPPING-MINIMUM DATA SETS: NCR PARKS (1:24,000)

Park/Unit: National Capital Regional Office

Project State(s): DC, MD, VA, WV Congressional District(s): 08

PMIS Number: 60900 Package Number: NCSO-108

Reference Number: NCRO-N-002.000

Project Group: Unassigned Project Type: Non-Facility

Project Contact Person: Patrick L. Toops Project Contact Phone: 202-342-1443

Project Narratives

Description:

Since 1996, the Eastern Earth Surface Processes Team (EESPT) of the USGS in Reston, VA, has been working on ArcInfo developed geologic maps, databases, and interpretive guides and exhibits of several park units in the NCR as part of the USGS/NPS MOU. These include (1) George Washington Memorial Parkway, Great Falls Park, Va., and Chesapeake and Ohio Canal National Historical Park, Great Falls, Md., (2) Harpers Ferry National Historical Park, and (3) Chesapeake and Ohio Canal NHP including Antietam National Battlefield. Only Harpers Ferry National Historical Park has been completed as an ArcInfo geologic map and provided to the NPS as a CD-ROM. The Great Falls Park component is almost ready to be released to the NPS, and C&O Canal NHP should be completed this fiscal year (FY2000). EESPT is currently producing a regional ArcInfo geologic map and database of 1:24,000-scale data compiled and digitized at 1:100,000-scale of this area. However, the specific needs of the NPS require additional field data, digitization at scales of 1:24,000 or smaller, and a database that transforms the maps into a useful tool.

We propose that the EESPT produce 1:24,000-scale ArcInfo geologic maps and databases of all the park units within the NCR over the next 3 years.

Several parks and areas such as Bear Island in C&O Canal NHP and Rock Creek Park may be mapped and digitized at 1:8000- to 1:12000-scale depending on the available digital topographic base maps and issues. Aspects of the database and geologic map will be released as a website linked to the NPS park unit websites for interpretation and outreach (for an example, see

http://geology.er.usgs.gov/eespteam/smoky/cades_cove/Cades_Cove_wp/introduction.htm).

Principal USGS Investigator is Mr. Scott Southworth.

Justification:

The National Park Service (NPS) Inventory and Monitoring Program requires each park to have a minimum data set for its geologic resources. Sixty-five percent (65%) of the park units

Appendix C: PMIS Project Statement 60900

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within the NCR do not have this information. The geologic data of the remaining 35% of the park units is at various scales and projections, not digital, more than 35 years old, and subsequently is not effectively utilized for planning and management decisions.

Geologic maps and databases of the park units could provide a major role in an integrated Geographic Information System (GIS) for spatial analyses by natural resource managers. The lithologic composition of the bedrock, and physiochemical weathering of it, directly relates to the depth and chemistry of the regolith, the non-transported surficial materials, and the formation of soils. Specific classes and types of rocks, for example ultramafic and carbonate rocks, and types of surficial deposits, such as rock-cut terrace islands and elevated gravel deposits, are associated with unique plant and animal communities. A GIS of these specific data could be used in biologic inventories, and spatial, and statistical analyses of the biotic components. Virtually all unique ecosystems in this region are related to unique geologic settings.

Geologic maps and databases of the park units could provide a major role in an integrated Geographic Information System for spatial analyses by natural and cultural resource managers. The lithologic composition of the bedrock, and physiochemical weathering of it, directly relates to the depth and chemistry of the regolith, the non-transported surficial materials, and the soils. Specific classes and types of rocks, for example ultramafic and carbonate rocks, and types of surficial deposits, such as rock cut terrace islands and elevated gravel deposits, have been shown to be useful indicators of plant and animal communities elsewhere. A GIS of these specific data could be used to devise a biologic inventory, and a then a spatial and statistical analyses of the components. Virtually all unique ecosystems in this region are related to a unique geologic setting, yet they have never been presented as such.

Measurable Results:

The work schedule and deliverables are as follows:

FY2001

- 1) Complete Great Falls Map and database and release to NPS; construct general interest website.
- 2) Begin geologic data collection and digitization at 1:24,000-scale of George Washington Memorial Parkway, Wolf Trap Farm Park, Monocacy National Battlefield, Rock Creek Park, and National Capital Parks-Central, and President's Park.

FY2002

- 1) Begin geologic data collection and digitization at 1:24,000-scale of Prince William Forest Park, Manassas National Battlefield Park, and National Capital Parks-East.

FY2003

Appendix C: PMIS Project Statement 60900

NOTE: *this PMIS statement should be changed to reflect that the source of funding will be Inventory and Monitoring funds and NOT NRPP.*

- 1) Collect geologic data and digitize at 1:24,000-scale Catoctin Mountain Park.
- 2) Complete other databases and select websites. Review existing USGS geology maps 1:24,000 for C&O Canal NHP and Harpers Ferry NHP and upgrade digital data, if necessary, to be consistent to work currently being done.
- 3) Conduct training session with NPS on the utilization and application of the GIS layer.

USGS will need DLG data and digital topography at large scales of the park units.

Project Cost and Funding Information

Total Cost for Submission FY Request: \$23,000.00

Total Cost for Prior FY: \$0.00

Total Cost For Next FY: \$23,000.00

Total Project Cost: \$70,000.00

Eligible Funding Source(s): USGS Geologic Division - Projects Linked to Parks

USGS Geologic Division - National Cooperative Geologic Mapping Program

Preferred Funding Source: USGS Geologic Division - Projects Linked to Parks

Detailed Cost Estimate Information

Estimate By: Patrick L. Toops Date Of Estimate: 05/08/2000

Estimate Good Until: 05/08/2000

Class Of Estimate: A

Item Quantity Unit Unit Cost Item Total Cost

Geology Mapping

[This proposal is a cost shared project with USGS, whereby they will pick up the majority of the costs to this work out of their base program funding. The 70,000 is our NCR contribution to assist the project work.] 1.00 Lump \$70,000.00 \$70,000.00

Total Project Cost \$70,000.00

Project Priorities

Unit Priority: 999.90 Unit Priority Band: Future

Regional Priority: 999.90

National Priority: 999.90 National Priority Band: Future

Project Schedule

Planned Year: 2001

Submission Year: 2000

Appendix C: PMIS Project Statement 60900

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Target Start Date: 04/26/2001
Target Completion Date: 12/31/2003
Project Status: Waiting
Project Submission Date: 05/08/2000

Project Accomplishment Report
Project Completion Status: NA
Project Completion Date:

Report Submission Date:
Report Submitted By:

Report Last Update Date:
Report Updated By:

The following is the Accomplishment Report for this project:

Project Emphasis and Goals
Asset Types:
Geologic Resource, general or not listed
Activity Types:
Inventory Resources
Emphasis Areas:
Natural Resource Protection
National GPRA Goal(s) For This Project:
Natural Resource Inventories

Project Modification Information
Date Submitted: 05/08/2000
Updated By: Jim Sherald (NCRNRPP)
Date Last Updated: 04/20/2001
Review Status: Region Reviewed 05/25/2000 / Awaiting WASO Review